Letter from Alexander Graham Bell to Gardiner Greene Hubbard, March 18, 1878, with transcript

Letter from Alexander Graham Bell to Gardiner Greene Hubbard. 57 West Cromwell Road, S. W. London. March 18, 1878. Dear Mr. Hubbard:

I am glad that you have taken steps to become interested in the Phonograph for I believe in a great future for it both separately and in connection with the Telephone.

It is a most astonishing thing to me that I could possibly have let this invention slip through my fingers when I consider how my thoughts have been directed to this subject for so many years past. So nearly did I come to the idea that I had stated again and again in my public lectures the fundamental principles of the Phonograph. In showing to an audience the tracings produced by the Phonautograph I had said if the motions indicated by the curves could be reduced mechanically in any way the sounds would be audible. For instance I have said in my lectures that if I were to move my hand in the way indicated by these curves articulate sounds would proceed form the hand. And yet in spite of this the thought never occurred to me to indent a substance and from the indentations to reproduce sound. Two French Physicists have been working at this subject for a couple of years past and were much chagrined by Edisons phonograph anticipating their invention.

I believe that the phonograph will be enormously improved. I am having made an apparatus that will give still better results even than those produced by Edison. The articulation of those Phonographs we have seen in this country has been imperfect chiefly I think on account of the fact that the motion of the spring is 2 produced only in one direction. It can be pushed up out of a depression but it has to fall into the next depression by its own elasticity and unless the normal rate of vibration is very much slower than the rate of the sound to be produced the shape of one half of the vibration will be distorted.

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My idea is to drag a slip of tinfoil rapidly under a vertical style which is caused to press upon the tinfoil with uniform force by means of a weight or spring so that the normal action of the apparatus will be to create a straight furrow or groove of uniform depth and thickness.

A section of this furrow would be rectangular. A horizontal motion is imported to the style by a telephone plate and thus the furrow instead of being in a straight line becomes a sinuous line in fact the curves produced by the phonautograph will be produced by this apparatus, in an indented from.

From this tinfoil a cast can be made in some solid material and an impression taken from this cast in copper or lead or other material as in the case of stereotype plates. Let this solid plate of lead or other material be arranged under the style from which the original impressions were taken so that the style fits into the groove. The dragging forward of the plate will then occasion a horizontal motion of the style and thus the sounds will be reproduced from the telephone plate.

In the case of this form of Phonograph the motion of the style is completely controlled and the sounds produced should 3 therefore be a perfect facsimile of the original sounds if the plate is dragged forward at the same rate of speed.

I enclose a drawing of apparatus.

Yours very truly, Alexander Graham Bell. P. S. The following rude sketch may give you the idea.

A. Two telephone plates united by B. a slip of wood bearing C. the style carrying on its top D. a weight. E. Tinfoil.